

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 22 (Canceled)

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23. (Original): A process for forming a substantially non-crystalline, ultra-high molecular weight polyolefin comprising:

contacting olefin monomers with a catalyst system in a reactant mixture,

wherein the catalyst system includes a transition metal catalyst and a halohydrocarbon co-catalyst; and

polymerizing the olefin monomers at a temperature at about or less than 25°C,

wherein during the polymerization, at least a portion of the olefin monomers polymerize in the reactant mixture to provide a non-crystalline, ultra-high molecular weight polyolefin.

24. (Original): The process of claim (23), wherein the catalyst system includes an alkylaluminumoxane.

25. (Original): The process of claim (24), wherein the alkylaluminumoxane is selected from the

group consisting of methylaluminoxane and isobutylaluminoxane.

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26. (Original): The process of claim 23, wherein the olefin monomers are alpha olefin monomers.

27. (Currently Amended): The process of claim 26, wherein the alpha olefin monomers ~~comprises homopolymers, terpolymers or copolymers~~ include at least one of 1-hexene, 1-octene, 1-decene, 1-dodecene, or mixtures thereof.

28. (Currently Amended): The process of claim 26 wherein the alpha olefin monomers ~~comprise co-polymers of 1-hexene and 1-dodecene alpha olefins or co-polymers of 1-octene and 1-tetradodecene alpha olefins~~ include a combination of 1-hexene and 1-dodecene alpha olefin monomers or a combination of 1-octene and 1-tetradodecene alpha olefin monomers.

29. (Original): The process of claim 23, wherein the polymerization is terminated by adding a deactivator to the reactant mixture after at least a portion of the olefin monomers polymerize in the reactant mixture to provide the non-crystalline, ultra-high weight polyolefin.

30. (Original): The process of claim 23, wherein the olefin monomers are polymerized by

bulk polymerization.

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31. (Original): The process of claim (23), wherein the transition metal catalyst includes titanium trichloride.

32. (Currently Amended): The process of claim (23) wherein the catalyst system further includes diethylaluminum chloride or dibutylaluminum chloride.

33. (Original): The process of claim (23), wherein the reactant mixture includes at least one hydrocarbon solvent.

34. (Original): The process of claim (33), wherein the olefin monomers and polyolefin remain substantially dissolved in the hydrocarbon solvent during polymerization.

35. (Original): The process of claim (23), wherein the polymerization of the olefin monomers continues such that polyolefin is present in the reactant mixture at a concentration of at least about 4 weight percent based upon the weight of the reactant mixture and the polyolefin includes an inherent viscosity of at least about 10 deciliters.

36. (Original): A process for forming a substantially non-crystalline, ultra-high molecular weight polyolefin comprising:

contacting olefin monomers with a catalyst system in a reactant mixture,

wherein the catalyst system includes a non-metallocene transition metal catalyst and an alkylaluminumoxane co-catalyst; and

polymerizing the olefin monomers at a temperature at about or less than 25°C,

wherein during the polymerization, at least a portion of the olefin monomers polymerize in the reactant mixture to provide a non-crystalline, ultra-high molecular weight polyolefin.

37. (Original): The process of claim 36, wherein the alkylaluminumoxane co-catalyst is selected from the group consisting of methylaluminumoxane and isobutylaluminumoxane.

38. (Original): The process of claim 36, wherein the transition metal catalyst comprises titanium trichloride.

39. (Original): The process of claim 36, wherein the olefin monomers are alpha olefin monomers.

40. (Currently Amended): The process of claim 39, wherein the alpha olefin monomers ~~comprise~~

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homopolymers, terpolymers or copolymers include at least one of 1-hexene, 1-octene, 1-decene, 1-dodecene, or mixtures thereof.

41. (Currently Amended): The process of claim 39, wherein the alpha olefin monomers ~~comprise co-polymers of 1-hexene and 1-dodecene alpha olefins or co-polymers of 1-octene and 1-tetradodecene alpha olefins~~ include a combination of 1-hexene and 1-dodecene alpha olefin monomers or a combination of 1-octene and 1-tetradodecene alpha olefin monomers.

42. (Original): The process of claim 36, wherein the polymerization is terminated by adding a deactivator to the reactant mixture after at least a portion of the olefin monomers polymerize in the reactant mixture to provide the non-crystalline, ultra-high weight polyolefin.

43. (Original): The process of claim 36, wherein the olefin monomers are polymerized by bulk polymerization.

44. (Original): The process of claim 36, wherein the transition metal catalyst includes titanium trichloride.

45. (Currently Amended): The process of claim 36, wherein the catalyst system further includes

diethylaluminum chloride or dibutylaluminum chloride.

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Contd. 46. (Original): The process of claim (36) wherein the reactant mixture includes at least one hydrocarbon solvent.

47. (Original): The process of claim (46) wherein the olefin monomers and polyolefin remain substantially dissolved in the hydrocarbon solvent during polymerization.

48. (Original): The process of claim (36) wherein the polymerization of the olefin monomers continues such that polyolefin is present in the reactant mixture at a concentration of at least about 4 weight percent based upon the weight of the reactant mixture and the polyolefin includes an inherent viscosity of at least about 10 deciliters.

49-51 (Withdrawn)